

DECEIVE MAR 10 2006 LYNN NILES

THE SHERWIN-WILLIAMS COMPANY Environmental, Health & Regulatory Services 101 Prospect Avenue NW Cleveland, Ohio 44115-1075 Facsimile: (216) 566-2730

March 6, 2006

Mr. Raymond Klimcsak United States Environmental Protection Agency 290 Broadway, 19th floor New York, NY 10007-1866

RE: Sherwin-Williams Gibbsboro Sites

Use of XRF Analyses During Remedial Investigation of Hilliard Creek

Dear Mr. Klimcsak:

The Sherwin-Williams Company (Sherwin-Williams) is requesting approval from the United States Environmental Protection Agency (EPA) for the use of a portable X-Ray Fluoresence (XRF) analyzer as a field screening tool during the Remedial Investigation (RI) of Hilliard Creek, one of the Gibbsboro, New Jersey sites. As you are aware, based on the results of the investigation that has been conducted to date, Priority Pollutant Metals (PPM), particularly lead and arsenic, are primary constituents of potential concern (COPCs) at Hilliard Creek. Use of a portable XRF analyzer will provide real time data, allowing our sampling teams to make field decisions regarding the need for additional vertical or horizontal sampling to define the extent of these constituents.

XRF is a well established tool for the field analysis of metals in soils. The XRF unit radiates the soil matrix, and the metals in the soil matrix release energy, or fluoresce, at known wavelengths, with the strength of the fluorescence proportional to the concentration of the metal in the soil matrix. Analyses can be performed either ex-situ in cores or bagged samples, or in-situ on surface soil. Comparisons of the results from the newest generation of XRF units with laboratory analyses of the same samples have shown extremely good correlations.

Background

Based on the data collected during the Strategic Sampling Program, it has been determined that the samples obtained at the perimeters of some transects installed along Hilliard Creek contained arsenic and/or lead at concentrations greater than screening criteria (arsenic: 8 mg/kg; lead: 400 mg/kg). It has also been determined based on these results that samples obtained from the deepest sampling intervals in some locations contain arsenic and/or lead at concentrations above the screening criteria. Although a few

perimeter and deep samples contained other constituents, lead and arsenic were found at the greatest frequency and highest concentrations.

Sherwin-Williams has proposed collecting additional samples at locations beyond the perimeter samples where lead and/or arsenic were detected at concentrations greater than the screening criteria. Sherwin-Williams has also proposed to collect samples from deeper intervals near the centerlines of several transects. Finally, Sherwin-Williams has proposed completing the remaining 200-foot transects along Hilliard Creek with some modifications of the sample locations and COPCs.

Based on the results that were obtained during the Strategic Sampling Program, there is a possibility that these new perimeter samples or the samples from the deeper intervals may also contain arsenic or lead at a concentration greater than their respective screening criterion. In this event, Sherwin-Williams would need to return to the field to complete the vertical and horizontal characterization of these constituents. In order to minimize this possibility, Sherwin-Williams is proposing to use a portable XRF unit to field screen the samples obtained from the perimeters of each transect and from the deeper intervals. In the event that the XRF results indicate that lead and/or arsenic remain at concentrations above the screening criteria, additional samples would be obtained.

XRF Unit and Performance

Attached to this letter are manufacturer's specifications and literature for a hand-held XRF unit we are considering for use at Hilliard Creek. A substantial benefit of this unit is the absence of the radioactive isotopes used in other units. As presented in the manufacturer's literature, there are several technical benefits, including avoidance of the decay in source strength typical of isotope-based units. Also, since there is no radiation source involved with this unit, there are no radioactive material licensing issues to be addressed.

The manufacturer specifies detection limits of 9 milligram per kilogram (mg/kg) and 13 mg/kg for arsenic and lead, respectively, without interference. In the presence of high concentrations of lead, the detection limits for arsenic increase; at our selected screening criterion for lead of 400 mg/kg, the detection limit for arsenic is 20 - 25 mg/kg.

There is a potential that because of the elevated detection limit for arsenic in the presence of lead, the XRF analysis could result in a false negative. That is, arsenic could be present at a concentration greater than the screening criterion but not detected because of the interference from the lead. In this event, it is possible that no additional delineation sample would be collected and a remobilization to that location could be required.

However, the conditions under which a false negative would prevent an additional delineation sample from being collected are limited to samples containing lead at concentrations below the screening criterion and arsenic at concentrations greater than 8 mg/kg, the screening criterion, but less than 20 - 25 mg/kg, the detection limit. If lead is

present above the screening criterion, an additional delineation sample would be collected to complete the characterization for lead. If arsenic is present at a level less than the screening criterion, no delineation sample is necessary. If arsenic is present above the elevated detection limit, it will be detected with the XRF unit. Based on a review of the data we have collected this far, this set of conditions does not appear to be widespread.

Therefore, we consider the detection limits acceptable for the screening purposes for which we intend to use the XRF unit. Lead will be easily detectable to well below its screening criterion, and arsenic will be detectable to a level approaching the screening criterion. As discussed below, any sample that will be used to define the extent of COPCs along Hilliard Creek will be analyzed at as per the Work Plan.

Sample Collection and Analysis

All samples from each transect will be collected as per the approved Work Plan, as clarified and modified by the approved Field Change Requests. All samples collected as per the approved Work Plan and Field Change Requests will be analyzed for the list of COPCs approved by the USEPA. Use of the XRF unit in the field will not change either the collection or analysis of these samples.

The samples obtained from the perimeter boring of each transect and from the deepest interval of selected interior boring locations will be bagged for shipment to the analytical laboratory and then analyzed with the XRF unit. As per the manufacturer's specifications, the XRF unit can be used on bagged samples. The homogenization of the sample as it is bagged will also serve to provide more representative results.

Based on the results of the XRF analysis, one of two actions will be performed:

- 1. If the XRF results are below the screening criteria, the sample will be sent to the laboratory and analyzed as per the Work Plan, and no additional samples will be collected at that location.
- 2. If the XRF results are above the screening criteria, the sample will be sent to the laboratory for analysis as per the Work Plan, but an additional delineation sample will be collected. If the original sample is a perimeter sample, the delineation sample will be collected from a location 10 50 feet beyond the original sample location. If the original sample is a sample obtained from a deeper interval from an interior sample, the delineation sample will be collected one foot below the original sample. The delineation sample(s) will be analyzed with the XRF unit, and, based on these results, one of the following actions will be taken:
 - a. If the XRF analysis of the delineation sample shows that all constituent concentrations are less than the screening criteria, the sample will be sent to the laboratory and analyzed for the COPCs specified for Hilliard Creek.

b. If the XRF results are above the screening criteria, an additional sample, either vertical or horizontal, will be collected and analyzed with the XRF unit. This will continue until the XRF results are below the screening criteria, and this last sample will be sent to a laboratory for analysis.

As per the above protocol, Sherwin-Williams is not proposing to replace any of the laboratory analyses of the samples identified in the Work Plan with an XRF analysis. Rather the XRF will be used to field screen the perimeter and deeper samples to ascertain whether the screening criteria had been achieved. If the XRF results are not below the screening criteria, additional samples will be collected.

EPA Method 6200 provides guidance on the use of portable XRF units for field analysis of soil. Sherwin-Williams will follow the guidance of EPA Method 6200 to the extent possible. One variation from this method, however, will involve the field analysis of soil with moisture contents above 20%. As you know, the soil along Hilliard Creek is frequently inundated and we expect that the soil will be wet, particularly in the samples obtained from the deeper intervals. However, since we are using the XRF as a screening tool, and not as a final analytical method, any data quality deterioration resulting from elevated soil moisture levels will be corrected in the fixed base laboratory analyses.

We believe that using this tool will minimize the need to return to Hilliard Creek to complete the characterization of the vertical and horizontal extent of the COPCs that are present. Please contact me if you have any questions or if you would like to discuss any issues.

Sincerely,

Mary Lou Capichioni

Director, Remediation Services

Mary Low Capichione

Attachments

cc:

H. Martin, ELM

R. Mattuck, Gradient

S. Jones, Weston

S. Clough, Weston

A. Fischer, Weston

J. Doyon, NJDEP

M. Pensak, EPA

L. Arabia, Tetra Tech FW

Alpha Series

analyzers provide on-site environmental metals testing

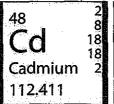
For point-and-shoot simplicity Innov-X offers the smallest, fastest and most versatile handheld XRF analyzer available.

The Innov-X tube-based Alpha Series™ takes/ on-site environmental metals analysis to a new level. It features a miniature, rugged X-ray tube. The Alpha Series™ provides reliable analysis on RCRA, Priority Pollutant metals and other elements in soils, liquids, coatings, etc. Meets EPA Method 6200 for metals in soils, NIOSH Method 7702 for lead in air filters, OSHA Methods OSS1 and OSA1 for lead/in surface wipes and air filters.



Pb			2 18 32
Lead 207.2		-	18 4

80	2
Йa	8 18
119	32
Mercury	اة 2
200.59	







51.94







Innovative XRF Technologies

A summary of its testing capabilities:

• RCRA and Priority Pollutant metals analysis in a wide variety of samples.

The Alpha Series™ identifies toxic metals, RCRA and other pollationts in a variety of samples.

- Metals in soil.
- Lead-based paint.
- Filter media.
- Dust wipe analysis,
- · CCA (Chromated Copper Arsenate) treated wood, other construction materials or debris. faints & coatings, hazardous waste classification, oils and liquids.

Innov-X Alpha Series™

The environmental analyzer for on-site, fast, confident screening of pollutants.

Rely on the Alpha Series™ for a wide variety of on-site environmental analyses. These include in-situ soil analysis for rapid site investigations and remediation projects. Operators may test directly on the ground or through bagged samples. By collecting and preparing soil samples you can achieve laboratory quality results in the field. The Alpha Series™ can be pre-calibrated for filters, coatings, CCA-treated wood and many other sample types.

The PDA Advantage.

The Alpha Series™ is driven by the HP IPAQ pocket PC.

- Upgrade to new generations as available.
- Use different PDAs and preserve personal settings.
- Wireless data transfer ideal for remote sites.
- Easily transfer data or download software and upgrades.



Custom holster lets you take Alpha SeriesTM anywhere.



Bluetooth enabled PDA for rel display, printing and data transfer.

⁴⁸Cd Cadmium 112.411

Hg Mercury 200.59

State-of-the-Art Technology.

Innov-X combines an X-ray tube source, multiple beam filtering and the HP PDA to deliver superior limits of detection, speed, precision and upgrade capability.

- Superior performance on Cr and other metals. Light Element Analysis Program (LEAP) analyzes P, S, Cl, K and Ca.
- Utilizes advanced and universal XRF data modeling: Compton Normalization: "Internal Standard" provides for quantitative analysis without site-specific calibrations. Fundamental Parameters: Standardless, ideal for samples with high and low concentrations of several elements. Empirical Calibrations: "Calibration Curves", allows usergenerated calibration curves.
- Add new elements and calibrations easily. Innov-X analyzers will meet your requirements today and in the future.
- View spectra on screen.
- Compare spectra for comparative analysis and display results versus standards.
- Stored tests can be re-run with new parameters or models.
- Data Security: stored in binary format for data integrity.

Basic Specifications.

Weight: 2.625 lbs. (base wt.) 3.375 lbs (1.6 kg) with batteries.

Excitation Source: X-ray tube, W anode, 10-40 kV 10-50 µA, up to 5 selectable filters.

LEAP: Delivers industry-leading detection limits on crifical elements Cr, Cl, P, Ba, Ti, S, Ca, K.

Detector; Si PiN diode detector, < 230 eV FWHM at 5.95 keV Mn K-alpha line. Temperature Range: -10°C to +50°C.

Operation: Trigger or Start/Stop Icon. One-touch trigger or "deadman" trigger option. Optional control from external PC.

Power: Li-ion batteries, rechargeable (charger included). Powers analyzer and iPAQ simultaneously. AC Adapter optional.

Battery Life: 8 hours (typical duty cycle) using built-in, optional multiple battery pack.

Number of Elements: Standard package includes 20 elements.

Standard Elements: Pb, Cr, Hg, Cd, Sb, Ti, Mn/Fe, Ni, Cu, Zn, Sn, Ag, As, Se, Ba, Co, Zr, Rb. Common additions: W, Br, Tl,

Display Screen: Color, high resolution touchscreen. Variable brightness provides easy viewing in all ambient lighting conditions.

Data Display: Concentrations in ppm, spectra, peak intensities (count rate) or user-specified units, depending on software mode selected.

Memory, Data Storage: 128 Mb standard memory. 20,000 test results with spectra, upgrade to >100,000 with optional 1 Gb flash card.

Processor: Intel 400 MHz StrongArm processor or higher.

Operating System: Microsoft Windows CE (portable system) or Windows (PC-based), Software Modes: Soil, Filter/Wipes, Empirical. Others available upon request.

Specifications subject to change without notice.



















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Alpha Series

portable XRF technology for analysis of arsenic and lead in soil.



Overview.

For decades, field portable X-ray fluorescence (XRF) has provided rapid, on-site measurements of metals contamination in soil. The purpose of such assessments was the identification and remediation

Interstate travel is particularly difficult because multiple state licensing and reciprocity arrangements must be made prior to travel – making rapid response impractical. Isotopes can be difficult to ship and transport, as they require hazardous materials declarations and/or permits.

All of these factors add significant additional cost and paperwork for source-based systems – more so for the environmental consulting community where regular travel to multiple job sites is common.



Alpha Series™ XRF analyser enables fast site survey for on-site analysis of As and Pb. In 1998, FPA incorporated
Method 6200 for portable XRF
into SWA846 as a standard
method. However, because field
portable XRF systems used
radioactive isotopes as their
source of X-rays, they were
expensive to own and operate.
They also created regulatory

burdens for their owners and made site-to-site travel difficult due to the requirements for transporting a radioactive source.

With its Alpha Series™ Innov-X Systems has pioneered a handheld XRF analyzer that utilizes an X-ray tube instead of radioactive isotopes. This battery powered point-and-shoot XRF system eliminates burdensome radioactive sources and provides on-the-spot quality data about elements critical to the analysis of metals in soil.

The single X-ray tube replaces multiple isotopes used in source-based systems to offer simultaneous analysis of 20-25 metals including all eight RCRA metals and the EPA priority pollutant metals. It generally provides superior detection limits (DL) compared to isotope systems. Moreover, the testing time never increases with an X-ray tube because there is no source decaying. The testing speed after 4-5 years is the same as when the analyzer was purchased.

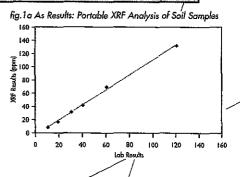
Innov-X Systems developed this technology to overcome the significant regulatory headaches of isotope-based XRF systems. Isotope-based units require the use of radioactive materials to irradiate the sample. The sources decay and lose testing speed over time. In addition to the loss in analytical capabilities, the sources have to be replaced. The use and subsequent disposal of radioactive isotopes also require licensing (state-to-state in the US) and a radioactive materials control program.

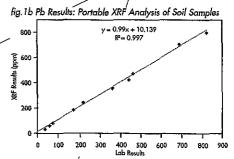
Arsenic and Lead Analysis.

Two strike most common metals requiring field analysis are lead (Pb) and street (Ps) the seminal strike both of these elements are ideal candidates for XRF analysis, analysing a first present of high Pb concentration presents some challenges, whereas high As common has no effect on the analysis of Pb. Interference-free detection limits (DLs) are shown in Table 1.

Table I	Interfere	nce-free	detectio	n limits	(DLs)	
Eli	ement	Det	ection	Limit	Ppm	
		(Inte	rference	Free, 2	minute l	est Time)
	РЬ.			3		
	As			9		
*As va	lues repre	sent lates	ti (Aug. 2	.003) val	ues.	

Results on laboratoryanalyzed samples are shown in Fig. la and 1b for arsenic and lead respectively. Correlations are good in a variety of soil samples, exhibiting R2 values of 0.99 in each case. The XRF calibration method - Compton Normalization method as described in EPA Method 6200 provides good results without the need for site-specific calibration corrections.



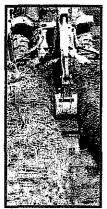


INNOV SYSTEMS

Innovative XRF Technologies

Alpha Series™

portable XRF technology for analysis of arsenic and lead in soil.



contamination patterns are quickly determined to facilitate remediation.

XRF Analysis for Arsenic in the Presence of Lead.

While analyzing lead and arsenic with portable XRF is relatively straightforward, analyzing arsenic when lead is present, particularly in high concentrations, poses an additional challenge. Lead produces two strong spectral peaks Lα at energy 10.5 keV and LB at 12.6 keV. Generally the lead LB peak is used for lead analysis. The best arsenic spectral line for measurement is the K_{α} peak also at 10.5 keV. Thus lead produces an interference, whereby the lead L_{α} completely overlaps the desired arsenic Ka spectral peak. The legal interference becomes detrimental to arsenic measurement in two ways:

- Elevates the arsenic detection level.
- Moderately reduces arsenic precision for the same testing time compared to an identical sample with no lead.

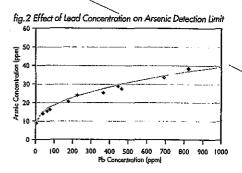
The Innoy & software algorithm automatically corrects the arsenic result when lead is present. The algorithm predicts the contribution in the 10.5 keV spectral reason from the lead L_{α} based on the interference-free measurement of the lead L $_{
m B}$. The lead L $_{
m C}$ contribution is subtracted, yielding the peak intensity due solely to the arsenic K_{α} .

However, the precision of the arsenic result (and the detection limit in the case of low arsenic concentrations) are affected because the statistical uncertainty of the lead L_{α} background subtraction yields a less precise result for the arsenic concentration. This effect does not occur if there is negligible lead present in the spectrum.

The impact on both As detection limit and precision can be determined. The arsenic detection limit as a function of lead concentration is presented in Fig. 2. Based on X-ray measurement statistics, the As detection limit increases as the square root of the increase in lead concentration, following the functional form in the equation below:

As
$$p_b = As \Big|_{noPb} + \sqrt{Pb(ppm)}$$

Figure 2 shows both the calculated (solid line) and measured arsenic detection limit as a function of lead concentration. For example, for no detectable lead in the sample (< 13 ppm) the As detection limit is approximately 9



ppm. The As DL increases smoothly to a value of about 19 for 100 ppm lead, and about 45 for 1,000 ppm lead. Thus for a 10-fold increase in lead concentration (100 ppm to 1,000 ppm), the detection limit worsens by a factor of about 2.5. The effect on precision of the arsenic measurement will follow a similar trend.

Summary.

Innov-X Alpha Series™ X-ray tube technology offers faster. higher-precision measurements of important environmental metals in soil and relieves the regulatory burden of using radioactive isotopes. Two of the most common elements analyzed are lead and arsenic. By themselves, both elements are excellent candidates for portable XRF analysis due to the high accuracy achievable, and the low detection limits.

Measurement of low concentrations of arsenic in the presence of high lead concentrations presents some unique challenges due to the large interference of the lead with the arsenic measurement. By quantifying the effect of lead concentrations on arsenic measurements, Alpha Series™ provides operators with a way to determine data quality objectives at sites with both Pb and As present, rather than relying solely on interference-free detection limits.





innovative XRF Technologies















No.:

1

Title:

Transect HCT 67 - Modification due to Steep Slope to North

Date:

7/5/05

Attachment: Y/N

/N Type:

While clearing and sampling Transect HCT 67, Weston observed that the northern portion of this transect advances up a fairly steep slope from the stream channel. There is approximately 5 feet of relief between the stream elevation and the top of the slope that takes place within a horizontal distance of approximately 10 feet. Based on this information it appears that this portion of the transect could be considered outside of the floodplain. The 2003 Work Plan calls for transects, and associated sampling, to be conducted in the floodplain. The question arose as to whether sampling in this elevated area was necessary.

On June 16, 2005, Pat Austin, Catfish Brownell, and Sally Jones (all of Weston), and Ray Klimcsak (EPA) conducted a site visit to inspect this location. It was agreed that the northern portion of Transect HCT 67 was mostly likely located outside of the floodplain. EPA and Weston agreed to revise the scope to only include collecting samples from the first 3 boring locations closest to the stream channel. These borings would be spaced at 5-foot intervals and samples would be collected consistent with the depths cited in the Work Plan. The need to sample the remainder of the locations along the northern portion of the transect would be reviewed once the analytical results are received.

EPA Approval:



No.:

2

Title:

Transect HCT 37 – Alternate Transect due to Access Issues

Date:

7/7/05

Attachment: Y/N

Type: Transect Map

Sherwin-Williams has not been able to gain access to Block 59.01/Lot 3.02, which is owned by the Gibbsboro Sewerage Corp. An email forwarded to EPA on June 22, 2005 summarizes our efforts-to-date to gain access. As a result of not gaining access, Weston is unable to collect samples along the southern two-thirds of Transect HCT 37.

Samples have been collected in the northern portion of the transect, which is located within property owned by the Borough of Gibbsboro (sample locations can be viewed with ArcIMS on TeamLink using the soil sample query), however it does not appear likely that access to the southern portion will be achieved without considerable legal effort nor in a reasonable time-frame.

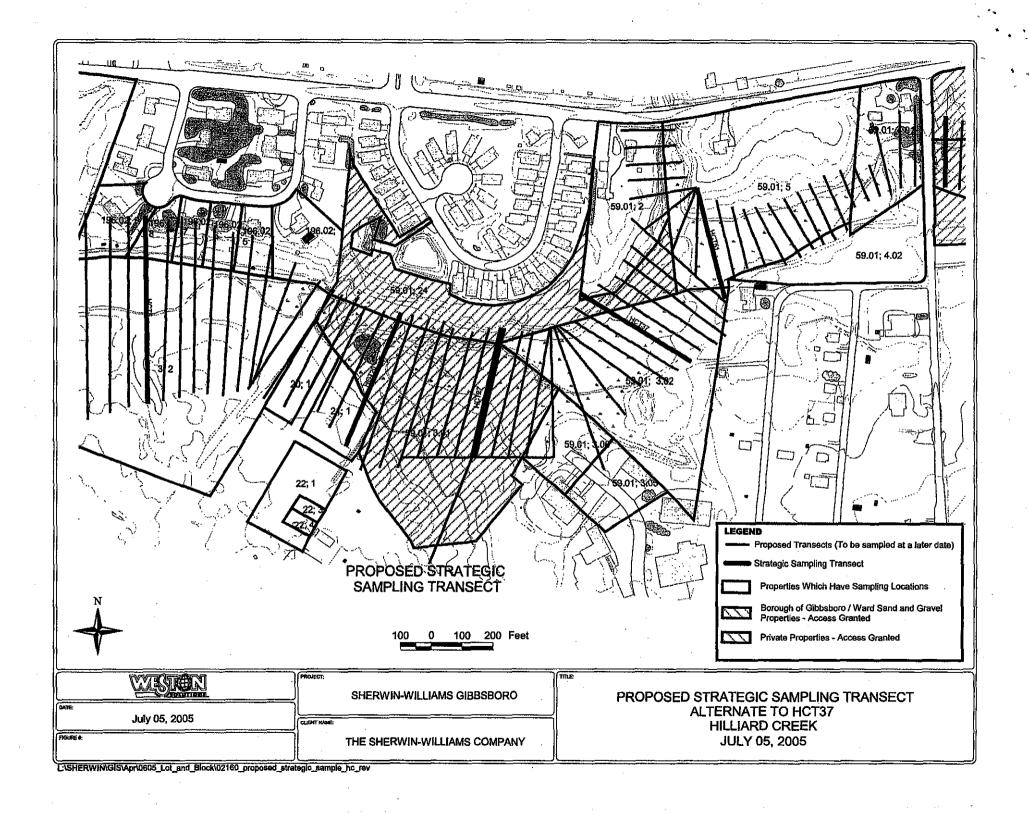
Based on this lack of access, Weston has requested approval to select another transect further downstream along Hilliard Creek to replace HCT 37. On June 16, 2005, Sally Jones (Weston), and Ray Klimcsak (EPA) conducted a site visit to inspect this location and identify a suitable replacement transect. During the weekly conference call with EPA on June 20, 2005, EPA agreed to select another transect for the Strategic Sampling Event.

Based on these meetings and discussions, it is proposed to designate Transect HCT 27 as an alternate/replacement for the southern portion of Transect HCT 37. Attached is a site map that identifies the location of Transect HCT 27 that will be added to the Strategic Sampling Event.



02160 proposed st rategic_sampl...

EPA Approval: /





No.:

Title:

Transect WST 13 – Dump Site

Date:

7/5/05

Attachment: Y/N

Type: Sketch Transect Map

Transect WST 13 is located along White Sand Branch within the fenced area of the Dump Site. The sampling approach for this transect required clarification and possible modification from the 2003 approved Work Plan because Weston encountered unique field conditions.

Transect WST 13 cuts across an area that is at a low elevation, compared to the surrounding area, and is generally very wet. The sampling teams observed two stream channels bisecting this transect. The presence of two channels is consistent with historic and current topographic maps of the area. The unique feature of this area, compared to other areas in Hilliard Creek, is that on either side of the channels the soils are very saturated with occasional ponding. This may be attributable to a high water table or temporary back-flooding. The field teams requested guidance on whether sediment or soil sampling protocols should be followed on either side of the channels.

Mary Lou Capichioni (Sherwin-Williams), Sally Jones and Patrick Austin (both Weston), Richard Funk (Tetra Tech) and Ray Klimcsak (EPA) conducted a site visit on Thursday, June 30, 2005, to inspect the transect area (see attached sketch map). Two stream channels were observed, each less than 5 feet in width. Mr. Klimcsak (EPA) agreed to a modification to the scope of work presented in the 2003 approved Work Plan due to the unique field conditions encountered at this transect. Samples will be collected along transect WST 13 in accordance with the following protocol:

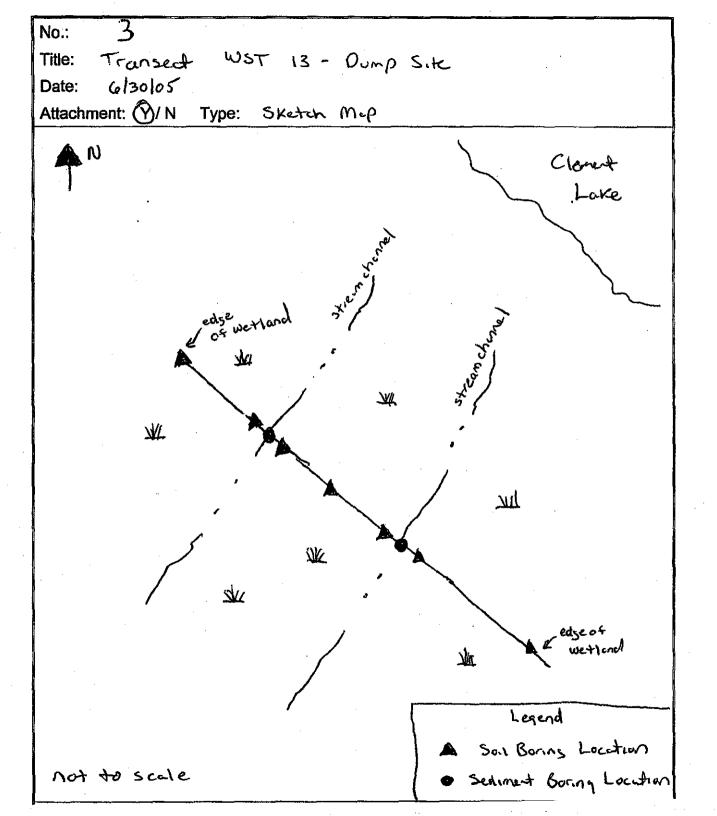
Based on the observed 5-foot width of the stream channels, one sediment boring will be located in each stream channel along the path of the transect and the sediment sampling approach from the 2003 Work Plan will be followed. This approach includes collecting two samples from each soil boring for full TAL/TCL analysis; 0-6 and 18-24 inches bgs.

Seven soil borings will be located along the remaining portions of the transect, as per the attached sketch map. Soil borings will be placed in the following areas:

- Five feet from each side of the stream channels (4 borings):
- One in the mid-center between each stream channel; and
- One boring at each end of the transect located at the edge of wetland.

Soil sampling	protocol	will be	in	accordance	with	the	2003	approved	Work	Plan	and
Addendum #1.			0	1							

EPA Approval: / My / Klunt





No.:

4

Title:

HCT 139 - Hilliard Creek

Date:

7/7/05

Attachment:

Y/N Type:

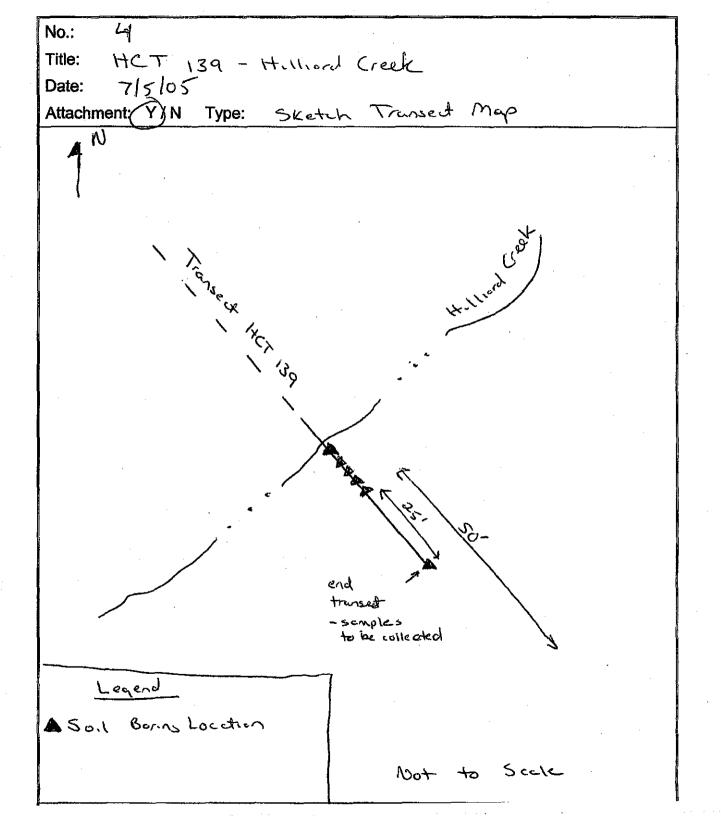
Sketch Transect Map

On June 30, 2005, Mary Lou Capichioni (Sherwin-Williams), Sally Jones, Patrick Austin and Catfish Brownell (all of Weston), Richard Funk (Tetra Tech) and Ray Klimcsak (EPA) conducted a site visit at Transect HCT 139 to address soil boring location questions raised by the soil sampling field team. As per the 2003 approved Work Plan, the soil sampling field team established boring locations every five feet from the stream channel embankment for the first 20 feet. The team raised questions when attempting to locate the next boring along the southern portion of the transect which, as per the Work Plan, was to be located 50 feet from the last boring located 20 feet from the stream channel embankment. In this situation, the transect ended approximately 25 feet from the last soil boring location, less than the 50-foot sampling distance required in the Work Plan. In addition, the end of the transect appeared to be outside of the floodplain. The team was unsure of where, or if, an additional boring location was required.

This specific question, as well as others raised by the soil sampling field team, has resulted in EPA and Sherwin-Williams deriving specific guidance for the field teams encountering similar situations. This Field Change Request is being generated to specifically address the agreement between EPA and Sherwin-Williams for Transect HCT 139.

During the June 30, 2005 site visit, Sherwin-Williams agreed to make a proposal to EPA. Sherwin-Williams proposes to locate one additional boring along the southern end of HCT 139, at the transect's terminus. The sampling will be conducted in accordance with Addendum #1 of the 2003 approved Work Plan. It was understood by EPA and Sherwin-Williams that this location was apparently outside of the floodplain and would represent upland conditions. A sketch map is attached.

EPA Approval:





No.:

Title:

Shallow Groundwater Well Locations - Dump Site

Date:

7/5/05

Attachment: Y/N

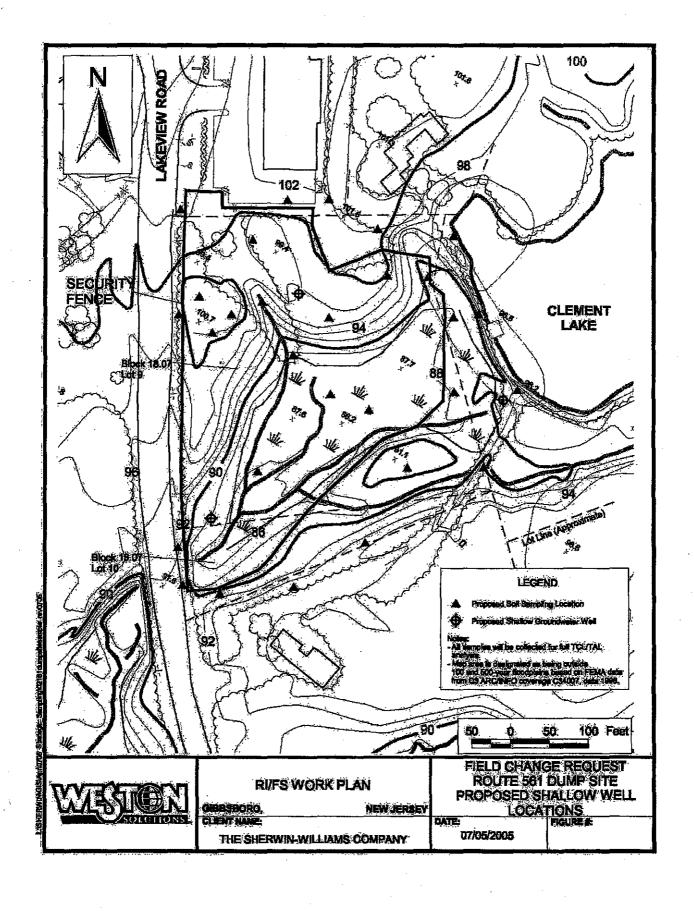
Type: Well Location Map

As per previous discussions and correspondence between EPA and Sherwin-Williams, there are three shallow groundwater monitoring wells proposed for the Dump Site.

Mary Lou Capichioni (Sherwin-Williams), Sally Jones and Patrick Austin (both Weston), Richard Funk (Tetra Tech) and Ray Klimcsak (EPA) conducted a site visit on June 30, 2005, to inspect the proposed locations. At that time, Sherwin-Williams and EPA agreed to the locations depicted on the attached figure.

The downgradient well was relocated approximately 100 feet to the north per EPA's request. The upgradient well was relocated approximately 15 feet to the northwest in an area with better access.

EPA Approval:





No.:

6

Title:

Transect HCT-91 - Modification due to Steep Slope to South

Date:

7/27/05

Attachment: Y/N

/ N Type:

While clearing and sampling Transect HCT-91, Weston observed that the southern portion of this transect advances up a fairly steep slope from the stream channel. There is approximately 3 to 4 feet of relief between the stream elevation and the top of the slope that takes place within a horizontal distance of approximately 10 to 15 feet.

Weston completed sampling at the two soil borings closest to the stream channel (Location IDs HCSB-0073 and 0074) and reserved the two upslope borings (Locations IDs HCSB-0075 and 0076) in the FieldFast data management program, but did not collect samples. The depth to water in the two upgradient borings was noted to be greater than 5 feet. These observations are reflected in the field notes from 6/13/05.

Based on this information, it appears that this portion of the transect could be considered outside of the floodplain, similar to the situation at Transect HCT-67.

On July 20, 2005, Pat Austin and Art Fischer (both of Weston), and Lynn Arabia (Tetra Tech/EPA oversight) conducted a site visit to inspect this location. Based upon this site inspection, EPA and Sherwin-Williams agreed to revise the scope to delete the sampling requirement for the two upslope soil borings (Locations IDs HCSB-0075 and 0076). The need to sample these upgradient locations would be evaluated once the analytical results were received.

EPA Approval: //



No.:

7

Title:

Transect HCT-1 – Modification due to Steep Slope

Date:

7/27/05

Attachment: Y/N

Type: Sketch Transect Map

While clearing Transect HCT-1, Weston observed that the southern portion of this transect advances up a fairly steep slope from Kirkwood Lake, proceeds across a foot path and then continues into a pine forest. There is approximately 3 to 4 feet of relief between the lake's water surface elevation and the top of the slope adjacent to the foot path that takes place within a horizontal distance of approximately 15 feet.

Based on this information, it appears that this portion of the transect could be considered outside of the floodplain.

On July 20, 2005, Pat Austin and Art Fischer (both of Weston), and Lynn Arabia (Tetra Tech/EPA oversight) conducted a site visit to inspect this location. Based upon this site inspection, EPA and Sherwin-Williams agreed to revise the scope to truncate the southern portion of the soil transect and stop collecting soil samples at the top of the bank adjacent to the foot path. The need to sample these upslope locations would be evaluated once the analytical results were received.

The northern portion of this transect will be inspected at a later date, and if necessary a Field Change Request Form submitted based on site-specific conditions.

HC5B-0199 AND 0200.

EPA Approval:



No.: Title: TRANSECT HET- 1 - MODIFICATION DUE TO STEEP SCORE Date: 7/27/05 Attachment: W/N Type: SKETCH MAP KIRK WOOD LAKE -KIRKWOOD LAKE PLAN VIEW - No SCALE **EPA Approval:** Date:



No.:

8

Title:

Transect HCT-5 – Modification due to Steep Slope

Date:

7/27/05

Attachment: Y/N

Type: Sketch Transect Map

While clearing Transect HCT-5, Weston observed that the southern portion of this transect advances up a fairly steep slope from Kirkwood Lake, proceeds across a foot path, descends to a low ponded area with standing water, and then gradually ascends through a wooded area. There is approximately 5 feet of relief between the lake's water surface elevation and the top of the slope adjacent to the foot path that takes place within a horizontal distance of approximately 10 feet.

Based on this information, it appears that this portion of the transect could be considered outside of the floodplain.

On July 20, 2005, Pat Austin and Art Fischer (both of Weston), and Lynn Arabia (Tetra Tech/EPA oversight) conducted a site visit to inspect this location. Based upon this site inspection, EPA and Sherwin-Williams agreed to revise the scope to truncate the southern portion of the soil transect and stop collecting soil samples at the top of the bank adjacent to the foot path. The need to sample these upslope locations would be evaluated once the analytical results were received.

The northern portion of this transect will be inspected at a later date, and if necessary a Field Change Request Form submitted based on site-specific conditions.

0202.

EPA Approval:



No.: 8
Title: TRANSECT HCT- 5" - MODIFICATION DUE TO STEEL SCORE
Date: 7/27/05
Attachment: Y/N Type: 5 KETEH MAP
CORRUCTED (~ 12'INCH & - PIRE SILTED UP - No FLOW) PRIME DEPUNDE WAY RICH WOOD LAKE PONDED ACEA TRANSECT HCT-5
PLM VIEW - No Scale
FOOTPATH GRADUAL UPSLAPI TO SOUTH LOW PONDED AREA LAWS LAWS APPROX. 100 FT
ELEVATION VIEW - No Seale
EPA Approval: Date:



No.:

9

Title:

Transect HCT-20 - Modification due to Flooded Transect

Date:

7/27/05

Attachment: Y/N

//N Type

Type: Sketch Transect Map

While clearing Transect HCT-20, Weston observed that the southern portion of this transect was flooded to a depth of approximately 6 inches, stretching approximately 150 feet from the edge of the stream bank to the limit of the phragmites. This condition appeared to be out of the ordinary due to the dry weather conditions that the area has been experiencing. Upon further investigation, it was determined that this flooding was due to the construction of a beaver dam located at Transect HCT-15.

Based on this information, Sherwin-Williams is requesting clarification as to how this transect should be sampled, specifically how to differentiate the sediment samples from the soil samples. Sherwin-Williams is proposing to sample the main channel of Hilliard Creek as sediment and to sample the flooded areas that would normally be out of the stream channel as soil borings.

On July 20, 2005, Pat Austin and Art Fischer (both of Weston), and Lynn Arabia (Tetra Tech/EPA oversight) conducted a site visit to inspect this location. Based upon this site inspection, EPA and Sherwin-Williams agreed to sample this flooded transect in the same manner as the adjacent Transect HCT-27, specifically sediment samples will be collected in the original stream channel and soil samples will be collected on land (even though it may be flooded at this time).

EPA Approval:



No.:

10

Title:

Transects BWL-20 and 21 – Modification due to Islands and Lake Width

Date:

7/27/05

Attachment: Y/N

Type: Sketch Transect Map

While sampling the upper section (eastern lobe) of Bridgewood Lake along the Railroad Track Site and United States Avenue, a discrepancy was noted regarding the length of the transects and their position relative to the location of the islands and width of the lake (see attached maps).

Transect BWL-20

Transect BWL-20 is located in the northwest section of the upper lake and extends from the NW shoreline of the lake to the island in the center. This transect traverses the stream entering from White Sand Branch in the adjacent Burn Site. remaining portion of this transect that crosses the SE section of Bridgewood Lake that is not part of the original Transect BWL-20, but would be located on the extension of that transect.

Sediment samples have been collected along the original Transect BWL-20 (Location IDs BWDD-0047 to 0049) and a soil sample was collected on the northwest shoreline (Location ID BWSB-0017). The southeast soil sample location, as depicted on the original transect, was located on the island and was not accessible to the soil

Based on the field conditions. Sherwin-Williams proposes to collect additional sediment samples along the extension of Transect BWL-20 in the SE section of Bridgewood Lake. It is proposed to collect two additional samples along this transect; one adjacent to the SE shoreline and the other 50 feet from that location in the vicinity of the island shoreline.

Regarding the soil sample location, Sherwin-Williams proposes to relocate this sample from the original transect location on the inaccessible island to the SE shoreline along the extension of the transect.

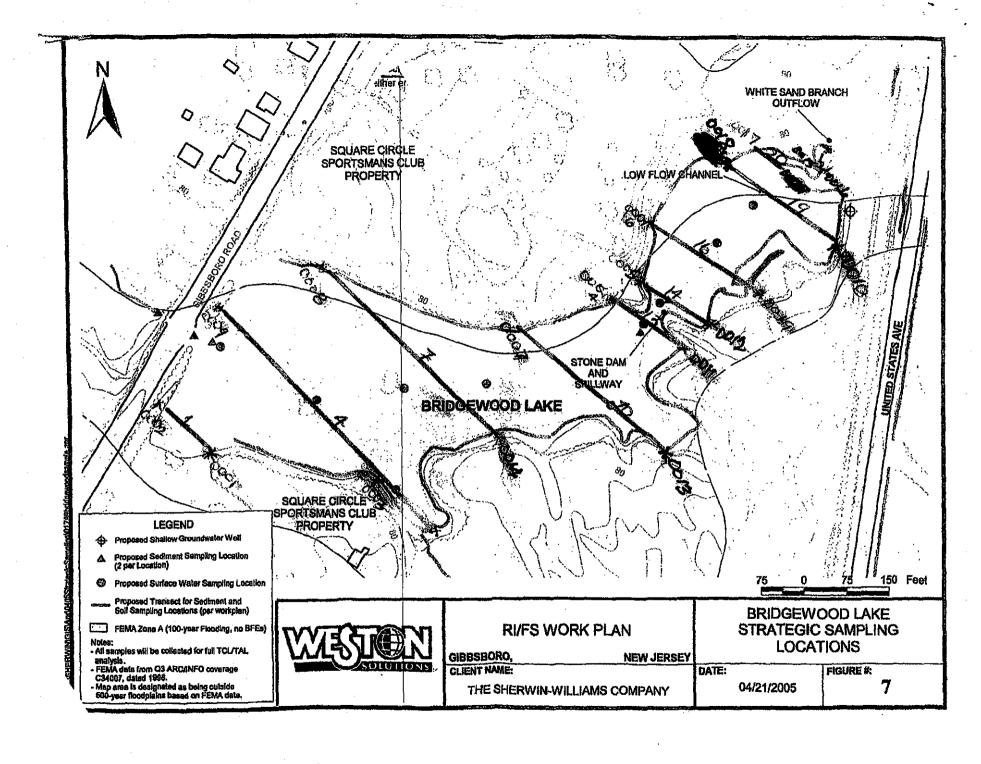
Transect BWL-21

Likewise, there is a similar situation with Transect BWL-21, as the original transect length does not span the width of the lake. This transect is located in a shallow backwater type area on the southeast shoreline.

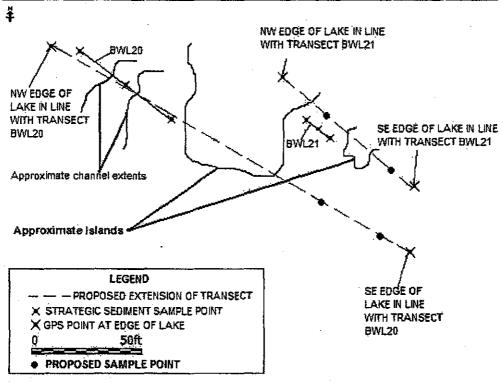
Sediment samples have not been collected in that area as yet, and it is proposed to collect two samples along this transect, one on each side of the small island that splits that transect.

Both soil sample locations were collected along the original location of the transect (Location IDs BWSB-0015 and 0016), and it is proposed to collect one additional sample on the SE shoreline along the extension of the transect.

EPA Approval:



EXISTING AND PROPOSED CONDITIONS AT BWL20 AND BWL21 AT BRIDGEWOOD LAKE, JULY 21, 2005





No.:

14

Title:

Burn Site – Delineation Soil Boring Locations

Date:

8/31/05

Attachment: Y/N

Type: Soil Boring Location Map

Upon review of the field observations noted during the soil boring program conducted at the Burn Site, it was determined that there are sample locations that merit additional vertical delineation and/or sample collection at particular depths. On August 29, 2005, Mary Lou Capichioni (Sherwin-Williams), Hank Martin (ELM), Sally Jones and Art Fischer (both of Weston), Ray Klimcsak (EPA) and Lynn Arabia (TetraTech/EPA oversight) attended a site meeting to discuss these observations.

Vertical Delineation Samples

During the investigation, if there was no evidence of contamination above or through the water table interface, the soil boring was abandoned and no samples were collected (in accordance with the November 2003 Work Plan). Upon further review of the field notes from these locations, it was observed that the above-mentioned borings (those terminated at the water table) are in close proximity to other borings that showed evidence of contamination above and through the water table interface. The borings that exhibited evidence of contamination (discoloration, staining, elevated PID readings) were advanced to depth (typically 10-12 feet bgs) until the contamination was delineated and a 'clean' sample was collected below the contaminated interval.

Due to the fact that these terminated borings are in close proximity to borings where contamination was noted at depth, Sherwin-Williams is proposing to advance these borings to depth (typically 10-12 feet bgs) to inspect and field screen the soils for evidence of contamination. If there is no evidence of contamination, this fact will be noted and no additional samples will be collected. If there is evidence of contamination, Sherwin-Williams will delineate and collect samples of the contaminated interval as well as the underlying 'clean' interval for full TAL/TCL analytical parameters.

The following sample locations at the Burn Site (BSSB) will be inspected and fieldscreened for evidence of contamination to confirm that vertical delineation has been achieved: 0001, 0011, 0012, 0016, 0018, 0030, 0034, 0040, 0041 and 0042.

Additional Samples

Upon further review of the field notes, it was determined that there was evidence of contamination (discoloration, staining, elevated PID readings) noted at particular boring locations that merited further investigation and sample collection.

The following sample locations at the Burn Site (BSSB) will be inspected and fieldscreened for evidence of contamination to confirm that vertical delineation has been achieved. Additional samples will be collected as necessary.

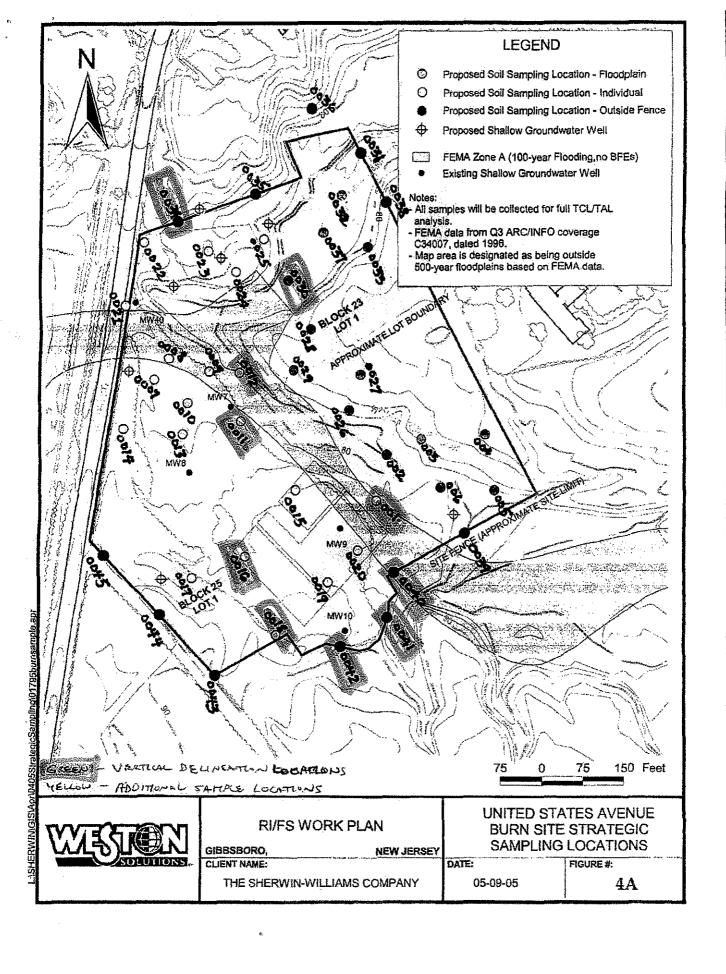
0017 – Staining noted at 2.0 to 2.5 ft. bgs, PID readings were 0.0. – Depth to water was determined to be 5.0 ft. bgs. The boring was completed to 6.0 ft. bgs. No other staining was noted other than at 2.0 to 2.5 ft. interval mentioned above. Samples were collected at 0.0 to 2.0 ft. bgs interval (AA-AE); 3.0 to 3.5 ft. bgs (AG-AH); and 4.5 to 5.0 ft. bgs (AJ-AK). Additional sample to be collected at 2.0 to 2.5 ft. interval (AE-AF) for full TAL/TCL analytical parameters.

0019 – Staining and discoloration noted from 0.0 to 6.0 ft. bgs, PID readings were 0.0. – Depth to water was determined to be 4.0 ft. bgs. No staining or discoloration noted below 6.0 ft. bgs. The boring was completed to 9.0 ft. bgs. Samples were collected at 0.0 to 2.0 ft. bgs interval (AA-AE) and 3.5 to 4.0 ft. bgs (AH-AI). Additional samples to be collected within the stained interval below the water table and within the underlying 'clean' interval for full TAL/TCL analytical parameters.

0020 - Staining and discoloration noted from 0.0 to 3.0 ft. bgs (PID readings = 60); and from 5.0 to 6.0 ft. bgs (PID readings = 400). Elevated PID readings (600) were also noted in the 6.0 to 9.0 ft. bgs interval. – Depth to water was determined to be 6.0 ft. bgs. The boring was terminated at 9.0 ft. bgs due to refusal. A total of 3 locations were attempted, and refusal was encountered at 9.0 ft. bgs at each location. Samples were collected at 0.0 to 2.0 ft. bgs interval (AA-AE); 3.0 to 3.5 ft. bgs (AG-AH); and 5.5 to 6.0 ft. bgs (AL-AM). Additional sample to be collected within the 6.0 to 9.0 ft. bgs interval for full TAL/TCL analytical parameters. An additional sample within the underlying 'clean' interval will also be collected if the driller is able to advance the boring past the refusal depth of 9.0 ft. bgs.

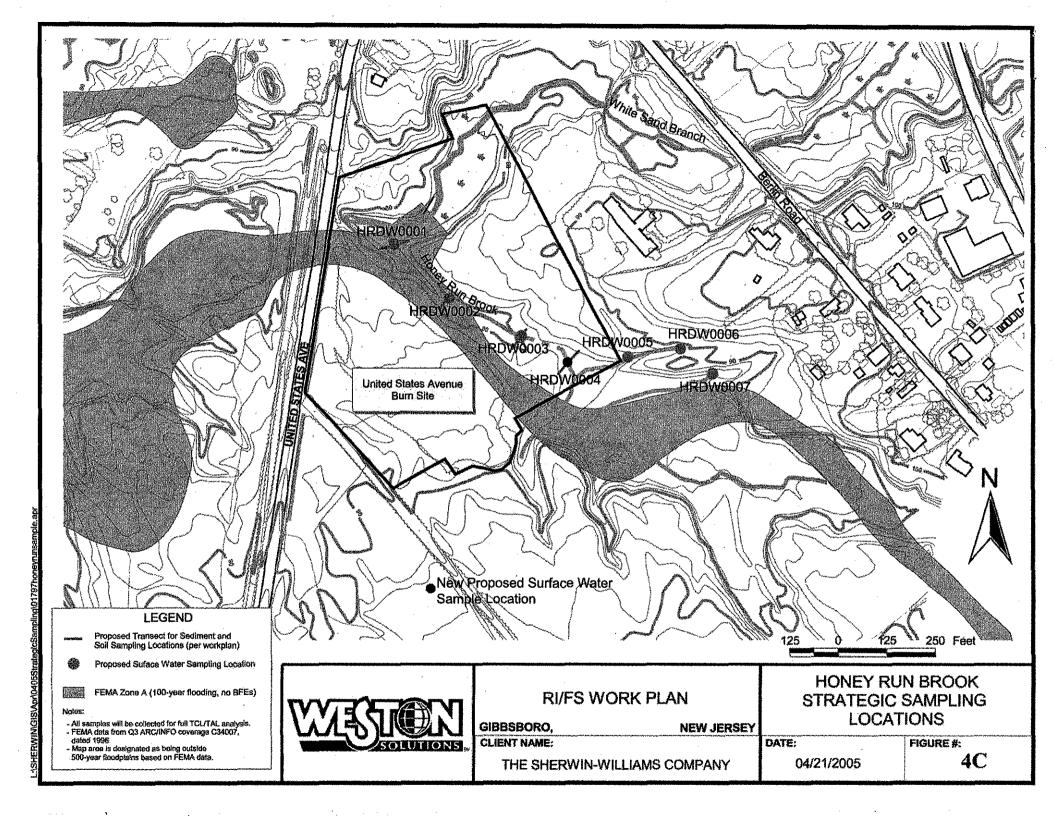
A map depicting the locations is attached.

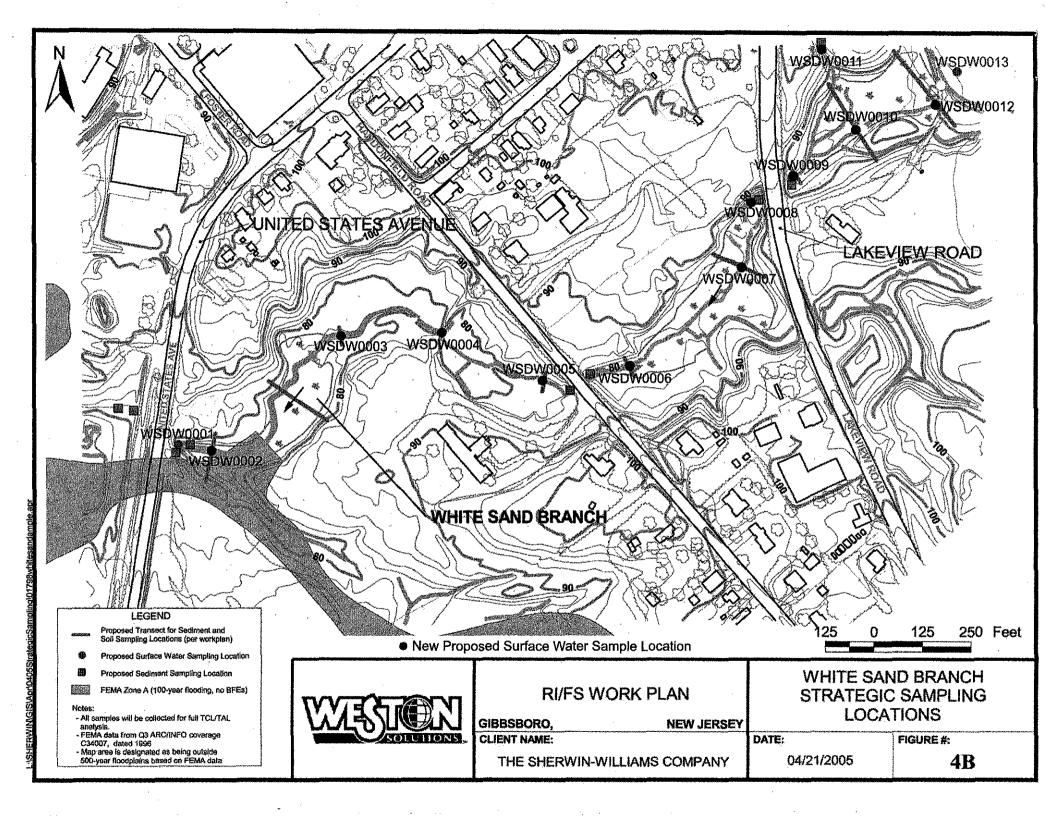
EPA	Approval	:
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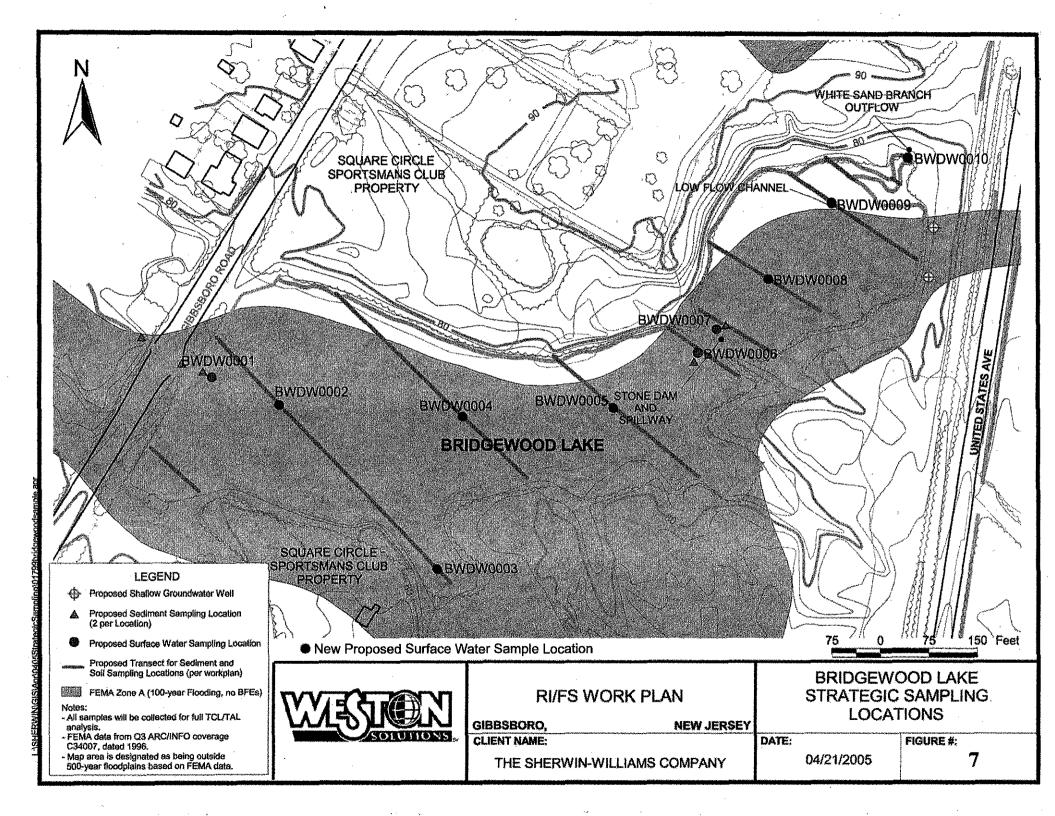


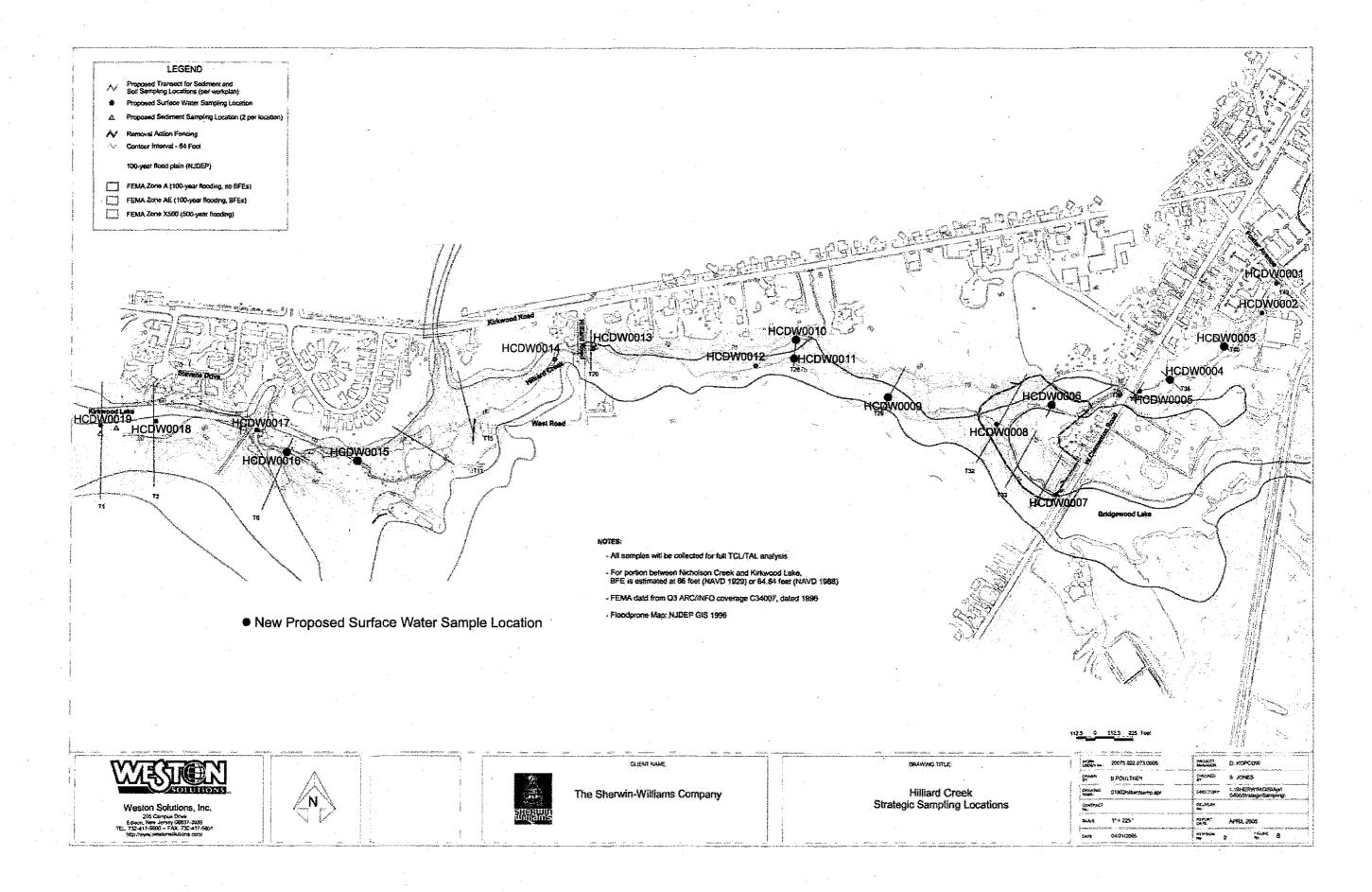


No.:	15		•				 -	-
Title:	Surface	Water	Sampling	Locations				
Date:	8/31/05							
Attachment:	Y/N	Type:	Surface V	Vater Sam	ple Locat	ion Map		
In preparation locations for Capichioni (S Weston), Ray meeting to set the locations with the transampling efforts	the about the rwin-Vertimes a Klimes a kleet the originally a sects	ve-refe Villiams ak (EPA locatior y propo	renced events), Hank Mand Lynn a) and Lynn as. Genera ased in the	ent was he artin (ELM) Arabia (To ally, the sur November	eld. On , Sally Jo etraTech/ face wate 2003 W	August 29 ones and A EPA overs er samples ork Plan to), 2005, I art Fische sight) atte s were sh o location	Mary Lour (both of nded this ifted from saligned
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EPA Approva				,,,,_				











No.:

16

Title:

Background Sampling Event - Relocation of Clement Lake Proposed

Sample Locations

Date:

9/13/05

Attachment: Y/N

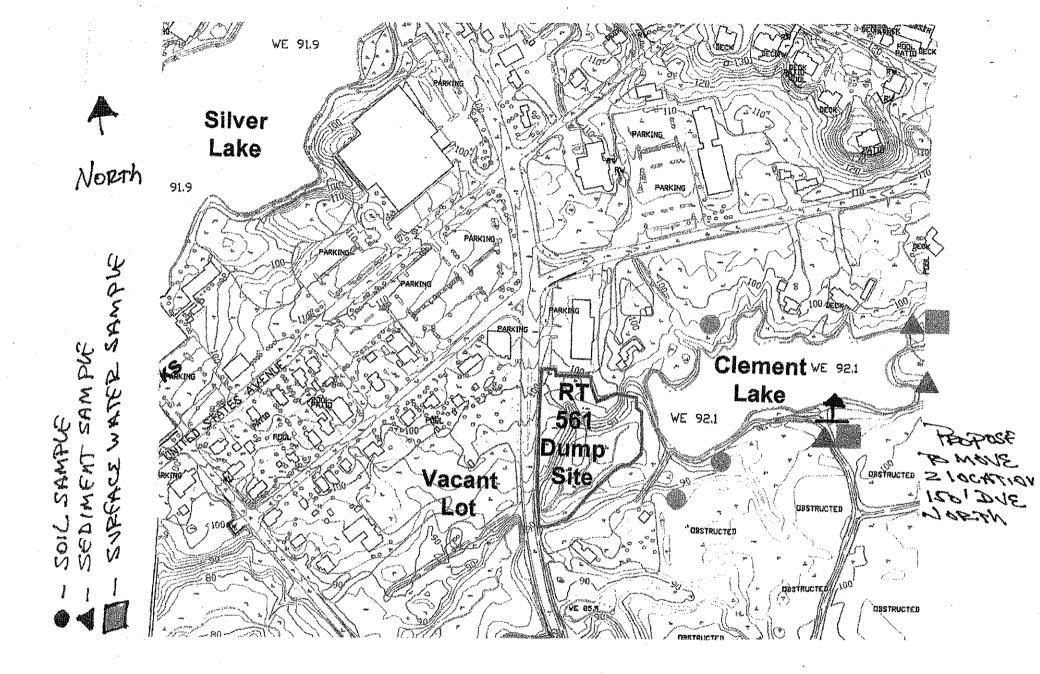
Type: Clement Lake Background Sample Location Map

During the layout of the proposed background sample locations at Clement Lake, a field reconnaissance was performed by Weston field personnel on September 1, 2005. At this time it was observed that the southern-most proposed sediment and surface water sample locations (respectively identified by a red triangle and orange square) along the perimeter of Clement Lake, corresponded to a dirt road, instead of a tributary entering Clement Lake. As such, sampling for the proposed sampling media from these locations would not be possible.

In response to these field conditions, Sherwin-Williams proposes to relocate this paired sediment/surface water sample location approximately 150 feet north to the southern shoreline as identified on the Proposed Background Sample Location Map.

A map depicting these locations is attached.

EPA	Approval	;
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No.:

17

Title:

Hilliard Creek – Vertical Delineation Transects HCT-135 and HCT-139

Date:

10/19/05

Attachment: Y/N

//N Tvp

Type: Soil Boring Location Map

Based on field observations and analytical results from the soil sampling conducted at transects HCT-135 and HCT-139, the USEPA has requested additional sampling for further vertical delineation at selected locations along these two transects. During a conference call on October 7, 2005, the USEPA identified four locations along each transect as possible locations for vertical delineation: HCSB 135, 140, 145 and 146 along transect HCT-139; and HCSB-151, HCSB-152, HCSB-156, and HCSB-157 along transect HCSB-135.

Selection of Sample Locations

Sherwin-Williams will collect additional vertical delineation samples at locations HCSB-0152 and HCSB-0156 along Transect HCT-135, and HCSB-135, HCSB-140 and HCSB-146 along transect HCT-139.

HCT-135

Sample location HCSB-0152 is immediately adjacent (within 5 - 10 feet) of HCSB-0151; therefore, sampling at one of these two locations is expected to provide vertical delineation for both. HCSB-0152 was selected rather than HCSB-0151 because it was the location where the highest concentration of lead (15,200 mg/kg) was found at the 1.0-1.5 interval, and arsenic levels were comparable in the samples obtained from the two locations.

Similarly, HCSB-0156 is immediately adjacent (within 5 feet) to HCSB-0157. HCSB-156 was chosen because the sample from HCSB-0156 at the 1.0'-1.5' interval contained higher concentrations of both lead and arsenic that the comparable sample from HCSB-0157.

HCT-139

HCSB-0145 and HCSB-0146 are adjacent to each other and vertical delineation at one location will provide vertical delineation at both. HCSB-0146 was selected because it contained slightly higher concentrations of both arsenic and lead at the 1.0 – 1.5' interval than did HCSB-0145.

HCSB-0140 was selected because it contained the highest concentration of lead (8,130 mg/kg) of any soil sample obtained along transect HCT-139, and, during the initial sampling, exhibited the highest PID readings (225 ppm).

HCSB-0135 is located approximately 25 feet northwest of HCSB-0140, was selected because it will provide vertical delineation near the northwestern perimeter of transect HCT-0135.

